

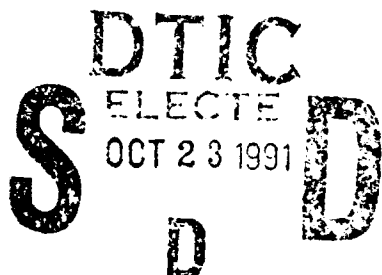
# Marine Physical Laboratory

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## MATCHED FIELD PROCESSING



Final Report Prepared for  
the Office of Naval Research  
Contract N00014-89-D-0142 (DO#9)  
Principal Investigator: William S. Hodgkiss

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## **MATCHED FIELD PROCESSING**

Principal Investigator: W.S. Hodgkiss

Marine Physical Laboratory  
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Final Report  
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### **Objective:**

Validation of parabolic equation (PE) full-wavefield modeling in a sloping environment using data from the Summer 1989 Downslope Conversion Experiment.

### **Background:**

Matched field processing has been quite successful in weakly-dependent environments. Little has been done to validate full-wavefield models in environments which have significant range variation. Examples of these include ridges and continental margin regions. Such bottom features have a significant impact on signal structure, reverberation, and characteristics of ambient noise.

### **Summary of Results:**

The primary thrust of this project was the analysis of SeaBeam bathymetry data in order to obtain spatial spectral characteristics of continental slope roughness. This information has been provided to NOSC for use in a new reverberation model (not yet completed) to predict the level of backscatter from continental margin regions.

The July 1989 Downslope Conversion Experiment studied the physics of downslope propagation which has been proposed as one mechanism by which energy from surface shipping traffic gets coupled into the deep sound channel. As part of that experiment, a SeaBeam bathymetric survey was conducted in the region of the continental slope west of Pt. Conception, CA.

In this project, the SeaBeam data was analyzed in order to characterize the spatial spectral characteristics of slope roughness. The analysis shows that the roughness characteristics vary with distance from the shelf break for this particular

region of the continental margin and are significantly different than the roughness characteristics of the deep sea floor just a short distance away from this sloping region.

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